THEREFORE, WE CLAIM:

1. In a process for coating an electroconductive substrate comprising the following steps:

(a) electrophoretically depositing on the substrate a curable electrodepositable coating composition to form an electrodeposited coating over at least a portion of the substrate,

the electrodepositable coating composition comprising a resinous phase dispersed in an aqueous medium, said resinous phase comprising:

(1) one or more ungelled active hydrogen-containing, cationic amine salt group-containing resins which are electrodepositable on a cathode, and

(2) one or more at least partially blocked aliphatic polyisocyanate curing agents;

(b) heating the coated substrate to a temperature and for a time sufficient to cure the electrodeposited coating on the substrate;

(c) applying directly to the cured electrodeposited coating one or more pigment-containing coating compositions and/or one or more pigment-free coating compositions to form a top coat over at least a portion of the cured electrodeposited coating;

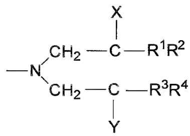
(d) heating the coated substrate of step (c) to a temperature and for a time sufficient to cure the top coat, the cured top coat having at least 0.1 percent light transmission measured at 400 nanometers,

the improvement comprising the presence in the curable electrodepositable coating composition of one or more cationic amine salt group-containing resins wherein the amine salt groups are derived from pendant and/or terminal amino groups having the following structures (I) or (II):

(I)

$$—NHR$$

or



(II)

wherein the R groups represent H or C_1 to C_{18} alkyl;

R^1, R^2, R^3, and R^4 are the same or different, and each independently represents H or C_1 to C_4 alkyl; and

X and Y can be the same or different, and each independently represents a hydroxyl group or an amino group.

2. The process of claim 1, wherein the cured top coat has from 0.1 to 50 percent light transmission measured at 400 nanometers.

3. The process of claim 1, wherein the cationic amine salt groups of resin (1) are derived from one or more pendant amino groups having the structure (II), such that when the electrodepositable coating composition is electrodeposited and cured, at least two electron-withdrawing groups are bonded in the beta-position relative to substantially all of the nitrogen atoms

4. The process of claim 1, wherein at least three electron-withdrawing groups are bonded in the beta-position relative to substantially all of the nitrogen atoms

5. The process of claim 1, wherein the electron-withdrawing groups are selected from an ester group, a urea group, a urethane group, and combinations thereof.

6. The process of claim 1, wherein the active hydrogen-containing, cationic amine salt group-containing resin (1) comprises a polymer selected from at least one of a polyepoxide polymer, an acrylic polymer, a polyurethane polymer, a polyester polymer, mixtures thereof and copolymers thereof.

7. The process of claim 1, wherein the resin (1) comprises a polyepoxide polymer.

8. The process of claim 1, wherein the resin (1) comprises a polyepoxide polymer and an acrylic polymer.

9. The process of claim 8, wherein the polyepoxide polymer is present in the electrodepositable coating composition in an amount ranging from 10 to 90 weight percent, based on total weight of resin solids present in the electrodepositable coating composition.

10. The process of claim 1, wherein the resin (1) comprises cationic amine salt groups derived from at least one compound selected from ammonia, methylamine, diethanolamine, diisopropanolamine, N-hydroxyethyl ethylene diamine, diethylenetriamine, and mixtures thereof.

11. The process of claim 1, wherein the resin (1) is present in the electrodepositable coating composition in an amount ranging from 20 to 80 weight percent, based on total combined weight of resin solids of the resin (1) and the curing agent (2) present in the electrodepositable coating composition.

12. The process of claim 1, wherein the curing agent (2) comprises at least one at least partially blocked polyisocyanate selected from 1,6-hexamethylene diisocyanate, isophorone diisocyanate, bis-(isocyanatocyclohexyl)methane, polymeric 1,6-hexamethylene diisocyanate, trimerized isophorone diisocyanate, norbornane diisocyanate and mixtures thereof.

13. The process of claim 12, wherein the curing agent (2) comprises one or more fully blocked polyisocyanates.

14. The process of claim 12, wherein the curing agent (2) comprises a fully blocked polyisocyanate selected from a polymeric 1,6- hexamethylene diisocyanate, isophorone diisocyanate, and mixtures thereof.

15. The process of claim 1, wherein the polyisocyanate curing agent (2) is at least partially blocked with at least one blocking agent selected from a 1,2-alkane diol, a 1,3-alkane diol, a benzylic alcohol, an allylic alcohol, caprolactam, a dialkylamine, and mixtures thereof.

16. The process of claim 15, wherein the polyisocyanate curing agent (2) is at least partially blocked with at least one 1,2-alkane diol having three or more carbon atoms.

17. The process of claim 15, wherein the polyisocyanate curing agent (2) is at least partially blocked with at least one blocking agent selected from a 1,2-alkane diol having more than three carbon atoms, and a benzylic alcohol, and mixtures thereof.

18. The process of claim 17, wherein the polyisocyanate curing agent (2) is at least partially blocked with 1,2-butanediol, benzyl alcohol, and mixtures thereof.

19. The process of claim 1, wherein the polyisocyanate curing agent (2) is present in the electrodepositable coating composition in an amount ranging from 20 to 80 weight percent, based on total combined weight of resin solids of the resin (1) and the curing agent (2) present in the electrodepositable coating composition.

20. The process of claim 1, wherein the coated substrate of step (a) is heated to a temperature ranging from 250° to 400°F (121.1° to 204.4°C).

21. The process of claim 1, wherein the electrodepositable coating composition is free of lead compounds.

22. The process of claim 1, wherein the coated substrate of step (a) is heated to a temperature of 360°F (180°C) or less for a time sufficient to cure the electrodeposited coating on the substrate.

23. The process of claim 1, wherein the coated substrate of step (a) is heated in an atmosphere having 5 parts per million or less of NO_x to a temperature and for a time sufficient to cure the electrodeposited coating on the substrate

24. The process of claim 23, wherein the coated substrate of step (a) is heated in an atmosphere having 1 part per million or less of NO_x to a temperature and for a time sufficient to cure the electrodeposited coating on the substrate

25. The process of claim 1, wherein the electrodepositable coating composition further comprises at least one source of a metal selected from rare earth metals, yttrium, and mixtures thereof, present in an amount of 0.005 to 5 percent by weight metal, based on total weight of resin solids present in the composition.

26. A process for forming photodegradation-resistant multi-layer coating on an electroconductive substrate comprising the following steps:

(a) electrophoretically depositing on the substrate a curable electrodepositable coating composition to form an electrodeposited coating over at least a portion of the substrate,

the electrodepositable coating composition comprising a resinous phase dispersed in an aqueous medium, said resinous phase comprising:

(1) one or more ungelled cationic polymers which are electrodepositable on a cathode, and

(2) one or more at least partially blocked aliphatic polyisocyanate curing agents;

(b) heating the coated substrate in an atmosphere having 5 parts per million or less of NOx to a temperature and for a time sufficient to cure the electrodeposited coating on the substrate;

(c) applying directly to the cured electrodeposited coating one or more pigment-containing coating compositions and/or one or more pigment-free coating compositions to form a top coat over at least a portion of the cured electrodeposited coating; and

(d) heating the coated substrate of step (c) to a temperature and for a time sufficient to cure the top coat, the cured top coat having at least 0.1 percent light transmission measured at 400 nanometers.

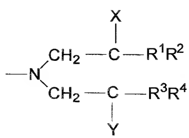
27. The process of claim 26, wherein the cationic polymer comprises cationic amine salt groups.

28. The process of claim 27, wherein the cationic amine salt groups are derived from pendant and/or terminal groups having the structure (I) or (II):

(I)

$$—NHR$$

or



(II)

wherein the R groups represent H or C_1 to C_{18} alkyl;

R^1, R^2, R^3, and R^4 are the same or different, and each independently represents H or C_1 to C_4 alkyl; and

X and Y can be the same or different, and each independently represents a hydroxyl group or an amino group.

29. The process of claim 27, wherein the cationic amine salt groups are derived from one or more pendant amino groups having the structure (II), such that when the electrodepositable coating composition is electrodeposited and cured, at least two electron-withdrawing groups are bonded in the beta-position relative to substantially all of the nitrogen atoms.

30. The process of claim 29, wherein the electron-withdrawing groups are selected from an ester group, a urea group, a urethane group, and combinations thereof.

31. The process of claim 26, wherein the top coat has from 0.1 to 50 percent light transmission as measured at 400 nanometers.

32. The process of claim 26 wherein the polymer (1) is selected from at least one of a polyepoxide polymer, an acrylic polymer, a polyurethane polymer, a polyester polymer, copolymers thereof, and mixtures thereof.

33. The process of claim 32, wherein the polymer (1) comprises a polyepoxide polymer.

34. The process of claim 32, wherein the polymer (1) comprises a polyepoxide polymer, an acrylic polymer, and mixtures thereof.

35. The process of claim 34, wherein the polyepoxide polymer is present in the electrodepositable coating composition in an amount ranging from 10 to 90 weight percent, based on total weight of resin solids present in the electrodepositable coating composition.

36. The process of claim 26, wherein the polymer (1) comprises cationic amine salt groups derived from at least one compound selected from ammonia, methylamine, diethanolamine, diisopropanolamine, N-hydroxyethyl ethylenediamine, diethylenetriamine, and mixtures thereof.

37. The process of claim 26, wherein the polymer (1) is present in the electrodepositable coating composition in an amount ranging from 20 to 80 weight percent, based on total combined weight of resin solids of the resin (1) and the curing agent (2) present in the electrodepositable coating composition.

38. The process of claim 26, wherein the curing agent (2) is selected from 1,6-hexamethylene diisocyanate, isophorone diisocyanate, bis-

(isocyanatocyclohexyl)methane, polymeric 1,6-hexamethylene diisocyanate, trimerized isophorone diisocyanate, norbornane diisocyanate, and mixtures thereof.

39. The process of claim 26, wherein the curing agent (2) comprises one or more fully blocked polyisocyanates.

40. The process of claim 39, wherein the curing agent (2) comprises at least one fully blocked polyisocyanate selected from polymeric 1,6- hexamethylene diisocyanate, isophorone diisocyanate, and mixtures thereof.

41. The process of claim 26, wherein the polyisocyanate curing agent (2) is at least partially blocked with at least one blocking agent selected from a 1,2-alkane diol, a 1,3-alkane diol, a benzylic alcohol, an allylic alcohol, caprolactam, a dialkylamine, and mixtures thereof.

42. The process of claim 41, wherein the polyisocyanate curing agent (2) is at least partially blocked with at least one 1,2-alkane diol having three or more carbon atoms.

43. The process of claim 41, wherein the polyisocyanate curing agent (2) is at least partially blocked with at least one blocking agent selected from a 1,2-alkane diol having more than three carbon atoms, a benzylic alcohol, and mixtures thereof.

44. The process of claim 43, wherein the polyisocyanate curing agent (2) is at least partially blocked with a blocking agent selected from 1,2-butanediol, benzyl alcohol, and mixtures thereof.

45. The process of claim 26, wherein the polyisocyanate curing agent (2) is present in the electrodepositable coating composition in an amount ranging from 20 to 80 weight percent, based on total combined weight of resin solids of the resin (1) and the curing agent (2) present in the electrodepositable coating composition.

46. The process of claim 26, wherein the coated substrate of step (a) is heated to a temperature ranging from 250° to 400°F (121.1° to 204.4°C).

47. The process of claim 46, wherein the coated substrate of step (a) is heated to a temperature of 360°F (180°C) or less for a time sufficient to cure the electrodeposited coating on the substrate.

48. The process of claim 26, wherein the electrodepositable coating composition is free of lead compounds.

49. The process of claim 26, wherein the electrodepositable coating composition further comprises at least one source of metal selected from rare earth metals, yttrium, and mixtures thereof, present in an amount of 0.005 to 5 percent by weight metal, based on the total weight of resin solids in the electrodepositable composition.

50. A process for forming a photodegradation-resistant multi-layer coating on an electrically conductive substrate comprising the following steps:

(a) electrophoretically depositing on the substrate an aqueous, curable electrodepositable coating composition to form an electrodeposited coating over at least a portion of the substrate,

the substrate serving as a cathode in an electrical circuit comprising the cathode and an anode, the cathode and the anode being immersed in the aqueous electrodepositable coating composition, wherein electric current is passed between the cathode and the anode to cause the coating to be electrodeposited over at least a portion of the substrate,

the electrodepositable coating composition comprising a resinous phase dispersed in an aqueous medium, said resinous phase comprising:

(1) one or more ungelled cationic amine salt group-containing polyepoxide resins which are electrodepositable on a cathode, and

(2) one or more at least partially blocked aliphatic polyisocyanate curing agents;

(b) heating the coated substrate at a temperature and for a time sufficient to cure the electrodeposited coating on the substrate;

(c) applying directly to the cured electrodeposited coating one or more pigment-containing coating compositions and/or one or more pigment-free coating

compositions to form a top coat over at least a portion of the cured electrodeposited coating; and

(d) heating the coated substrate of step (c) to a temperature and for a time sufficient to cure the top coat, the cured top coat having at least 0.1 percent light transmission as measured at 400 nanometers,

wherein the improvement comprises the inclusion in the circuit of a non-ferrous anode.

51. The process of claim 50, wherein the aqueous electrodepositable coating composition is in the form of an electrodeposition bath comprising less than 10 parts per million soluble iron.

52. The process of claim 50, wherein the coated substrate of step (a) is heated in an atmosphere having 5 parts per million or less of NOx.

53. The process of claim 52, wherein the coated substrate of step (a) is heated in an atmosphere having 1 part per million or less of NOx.

54. The process of claim 50, wherein the cured electrodeposited coating of step (b) comprises less than 10 parts per million soluble iron.

55. The process of claim 50, wherein the curable electrodepositable coating composition further comprises a material selected from at least one of a hindered amine light stabilizer, an antioxidant, an ultraviolet light absorber, and mixtures thereof.

56. In a process for coating an electroconductive substrate comprising the following steps:

(a) electrophoretically depositing on the substrate a curable electrodepositable coating composition to form an electrodeposited coating over at least a portion of the substrate,

the electrodepositable coating composition comprising a resinous phase dispersed in an aqueous medium, said resinous phase comprising:

(1) one or more ungelled active hydrogen-containing, cationic amine salt group-containing resins which are electrodepositable on a cathode, said resins selected from at least one of an acrylic polymer, a polyepoxide polymer, and mixtures thereof, and

(2) one or more aliphatic polyisocyanate curing agents at least partially blocked with one or more blocking agents selected from a 1,2-alkane diol having at least three carbon atoms, a benzylic alcohol, and mixtures thereof;

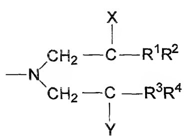
(b) heating the coated substrate to a temperature ranging from 250° to 400°F (121.1° to 204.4°C) for a time sufficient to cure the electrodeposited coating on the substrate;

(c) applying directly to the cured electrodeposited coating one or more pigment-containing coating compositions and/or one or more pigment-free coating compositions to form a top coat over at least a portion of the cured electrodeposited coating;

(d) heating the coated substrate of step (c) to a temperature and for a time sufficient to cure the top coat, the cured top coat having 0.1 to 50 percent light transmission as measured at 400 nanometers wavelength,

the improvement comprising the presence in the curable electrodepositable composition of cationic amine salt groups which are derived from one or more pendant and/or terminal amino groups having the following structure (II):

(II)



wherein

R^1, R^2, R^3, and R^4 are the same or different, and each independently represents H or C_1 to C_4 alkyl; and

X and Y are the same or different, and each independently represents a hydroxyl group or an amino group,

characterized such that when the electrodepositable coating composition is electrodeposited and cured, at least two electron-withdrawing groups are bonded in the beta-position relative to substantially all of the nitrogen atoms,

said electron-withdrawing groups selected from an ester group, a urea group, a urethane group, and combinations thereof.

57. A photodegradation-resistant multi-layer composite coating comprising:

a cured primer coating layer over at least a portion of an electroconductive substrate, and a cured top coat layer over at least a portion of the cured primer coating layer,

the primer coating layer being formed from a curable electrodepositable coating composition comprising a resinous phase dispersed in an aqueous medium, said resinous phase comprising:

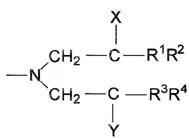
(1) one or more active ungelled hydrogen-containing, cationic amine salt group-containing resins which are electrodepositable on a cathode, and

(2) one or more at least partially blocked aliphatic polyisocyanate curing agents,

wherein the cationic amine salt groups are derived from pendant and/or terminal amino groups having the following structures (I) or (II):

(I) $—NHR$

or



(II)

wherein the R groups represent H or C_1 to C_{18} alkyl;

R^1, R^2, R^3, and R^4 are the same or different, and each independently represents H or C_1 to C_4 alkyl; and

X and Y can be the same or different, and each independently represents a hydroxyl group or an amino group,

the top coat layer being formed from one or more pigment-containing coating compositions and/or one or more pigment-free coating compositions,

characterized in that the multi-layer composite coating exhibits substantially no interlayer delamination between the cured primer coating layer and the cured top coat layer upon concentrated solar spectral irradiance exposure equivalent to two years outdoor weathering when the top coat layer has at least 80 percent light transmission as measured at 400 nanometers.

58. The multi-layer composite coating of claim 57, wherein the active hydrogen-containing, cationic amine salt group-containing resin (1) comprises a polymer selected from a polyepoxide polymer, an acrylic polymer, a polyurethane polymer, a polyester polymer, copolymers thereof, and mixtures thereof.

59. The multi-layer composite coating of claim 58, wherein the resin (1) comprises a polyepoxide polymer.

60. The multi-layer composite coating of claim 58, wherein the resin (1) comprises a polymer selected from at least one of a polyepoxide polymer, an acrylic polymer, and mixtures thereof.

61. The multi-layer composite coating of claim 60, wherein the polyepoxide polymer is present in the electrodepositable coating composition in an amount ranging from 10 to 90 weight percent or more, based on total weight of resin solids present in the electrodepositable coating composition.

62. The multi-layer composite coating of claim 57, wherein the cured top coat has from 0.1 to 50 percent light transmission measured at 400 nanometers.

63. The multi-layer composite coating of claim 57, wherein the cationic amine salt groups of resin (1) are derived from one or more pendant amino groups having the structure (II), such that when the electrodepositable coating composition is

electrodeposited and cured, at least two electron-withdrawing groups are bonded in the beta-position relative to substantially all of the nitrogen atoms.

64. The multi-layer composite coating of claim 63, wherein the electron-withdrawing groups are selected from an ester group, a urea group, a urethane group, and combinations thereof.

65. The multi-layer composite coating of claim 57, wherein the resin (1) comprises cationic amine salt groups derived from at least one compound selected from ammonia, methylamine, diethanolamine, diisopropanolamine, N-hydroxyethyl ethylenediamine, diethylenetriamine, and mixtures thereof.

66. The multi-layer composite coating of claim 57, wherein the resin (1) is present in the electrodepositable coating composition in an amount ranging from 20 to 80 weight percent, based on total combined weight of resin solids of the resin (1) and the curing agent (2) present in the electrodepositable coating composition.

67. The multi-layer composite coating claim 66, wherein the curing agent (2) comprises at least one at least partially blocked polyisocyanate selected from 1,6-hexamethylene diisocyanate, isophorone diisocyanate, bis-(isocyanatocyclohexyl)methane, polymeric 1,6-hexamethylene diisocyanate, trimerized isophorone diisocyanate, norbornane diisocyanate, and mixtures thereof.

68. The multi-layer composite coating of claim 66, wherein the curing agent (2) comprises one or more fully blocked polyisocyanates.

69. The multi-layer composite coating of claim 68, wherein the curing agent (2) comprises a fully blocked polyisocyanate selected from polymeric 1,6-hexamethylene diisocyanate, isophorone diisocyanate, and mixtures thereof.

70. The multi-layer composite coating of claim 57, wherein the polyisocyanate curing agent (2) is at least partially blocked with at least one blocking agent selected from a 1,2-alkanediol, a 1,3-alkanediol, a benzylic alcohol, an allylic alcohol, diallkylamine, and mixtures thereof.

71. The multi-layer composite coating of claim 70, wherein the polyisocyanate curing agent (2) is at least partially blocked with at least one 1,2-alkanediol having three or more carbon atoms.

72. The multi-layer composite coating of claim 70, wherein the polyisocyanate curing agent (2) is at least partially blocked with at least one blocking agent selected from a 1,2-alkanediol having more than three carbon atoms, a benzylic alcohol, and mixtures thereof.

73. The multi-layer composite coating of claim 72, wherein the polyisocyanate curing agent (2) is at least partially blocked with a blocking agent selected from 1,2-butanediol, benzyl alcohol, and mixtures thereof.

74. The multi-layer composite coating of claim 57, wherein the polyisocyanate curing agent (2) is present in the electrodepositable coating composition in an amount ranging from 20 to 80 weight percent, based on total combined weight of resin solids of the resin (1) and the curing agent (2) present in the electrodepositable coating composition.

75. The multi-layer composite coating of claim 57, wherein the electrodepositable coating composition is free of lead compounds.

76. The multi-layer composite coating of claim 57, wherein the electrodepositable coating composition further comprises at least one source of metal selected from rare earth metals, yttrium, and mixtures thereof, present in an amount of 0.005 to 5 percent by weight metal, based on the total weight of resin solids in the electrodepositable coating composition.

77. The multi-layer composite coating of claim 57, wherein the primer coating layer is cured in an atmosphere having 5 parts per million of NO_X or less.

78. The multi-layer composite coating of claim 57, wherein the primer coating layer is cured in an atmosphere having 1 part per million of NO_X or less.

79. A photodegradation-resistant multi-layer composite coating comprising:

a cured primer coating layer over at least a portion of an electroconductive substrate, and a cured top coat layer over at least a portion of the cured primer layer,

the primer coating layer being formed from a curable electrodepositable coating composition comprising a resinous phase dispersed in an aqueous medium, said resinous phase comprising:

(1) one or more active hydrogen-containing, cationic amine salt group-containing resins which are electrodepositable on a cathode, said resin selected from an acrylic polymer, a polyepoxide polymer, and mixtures thereof; and

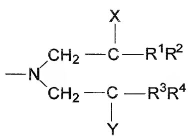
(2) one or more aliphatic polyisocyanate curing agents at least partially blocked with a blocking agent selected from a 1,2-alkane diol having more than three carbon atoms, a benzylic alcohol, and mixtures thereof,

wherein the cationic amine salt groups of the resin (1) are derived from pendant and/or terminal amino groups having the following structures (I) or (II):

$$—NHR$$

(I)

or



(II)

wherein the R groups represent H or C_1 to C_{18} alkyl;

R^1, R^2, R^3, and R^4 are the same or different, and each independently represents H or C_1 to C_4 alkyl; and

X and Y are the same or different, and each independently represents a hydroxyl group or an amino group,

the top coat layer being formed from one or more pigment-containing coating compositions and/or one or more pigment-free coating compositions,

characterized in that the multi-layer composite coating exhibits substantially no interlayer delamination between the cured primer coating layer and the cured top coat layer upon concentrated solar spectral irradiance exposure equivalent to two years outdoor weathering when the top coat layer has at least 80 percent light transmission as measured at 400 nanometers.

80. A process for coating a metal substrate comprising the following steps:

(a) electrophoretically depositing on the substrate a curable, electrodepositable coating composition comprising the following components:

(1) an active hydrogen-containing, cationic salt group-containing resin electrodepositable on a cathode; and

(2) an at least partially blocked polyisocyanate curing agent,

wherein the cationic salt group-containing resin of component (1) is derived from a polyglycidyl ether of a polyhydric phenol essentially free of aliphatic carbon atoms to which are bonded more than one aromatic group, and

wherein the curing agent of component (2) is essentially free of isocyanato groups or blocked isocyanato groups to which are bonded aromatic groups;

(b) heating the substrate to a temperature of 250°F to 400°F (121.1°C to 204.4°C) for a time sufficient to effect cure of the electrodepositable composition;

(c) applying directly to the electrodepositable composition one or more pigmented-containing top coating compositions and/or one or more pigment-free top coating compositions; and

(d) heating the coated substrate to a temperature and for a time sufficient to effect cure of the pigment-containing and/or pigment-free top coating compositions.

81. The process of claim 80, wherein the metal substrate is selected from steel coated with a zinc-rich or iron phosphide-rich organic coating; stainless steel; steel surface-treated with zinc metal, zinc compounds or zinc alloys; aluminum; copper; magnesium; magnesium alloys; zinc-aluminum alloys and combinations thereof.

82. The process of claim 81, wherein the metal substrate comprises more than one metal.

83. The process of claim 80, wherein the cationic salt groups in the resin of component (1) are amine salt groups.

84. The process of claim 83, wherein the cationic salt groups are derived from an amine containing a nitrogen atom to which is bonded at least one substituted alkyl group having a hetero atom in a beta- position relative to the nitrogen atom.

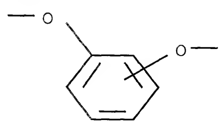
85. The process of claim 84, wherein the amine salt groups are derived from a compound selected from diethanolamine, aminopropyldiethanolamine, N-methylethanolamine, aminopropylmorpholine, N-(2-aminoethyl)-morpholine, diethylenetriamine, diethylenetriamine bisketimine, and mixtures thereof.

86. The process of claim 83, wherein the amine salt groups are derived from basic nitrogen groups neutralized with an acid selected from the group consisting of formic acid, acetic acid, lactic acid, phosphoric acid, sulfamic acid, dimethylolpropionic acid, and mixtures thereof.

87. The process of claim 80, wherein the polyhydric phenol is selected from the group consisting of resorcinol, hydroquinone, catechol, and mixtures thereof.

88. The process of claim 87, wherein the polyhydric phenol is selected from resorcinol, catechol, and mixtures thereof.

89. The process of claim 87, wherein the resin of component (1) comprises at least 16 percent by weight, based on the total weight of the resin solids, of a functional group having the following structure:



90. The process of claim 80, wherein the electrodepositable coating composition further comprises at least one source of a metal selected from rare earth metals, yttrium, and mixtures thereof, present in an amount of 0.005 to 5 percent by weight metal, based on the total weight of resin solids in the electrodepositable coating composition.

91. The process of claim 90, wherein the metal comprises yttrium.

92. The process of claim 80, wherein the electrodepositable coating composition further comprises a hindered amine light stabilizer, present in an amount of 0.1 to 2 percent by weight, based on the total weight of resin solids in the electrodepositable coating composition.

93. The process of claim 80, wherein the cationic salt group-containing resin of component (1) in the electrodepositable coating composition is present in an amount of 20 to 80 percent by weight based on the total combined weight of resin solids of (1) and (2).

94. The process of claim 80, wherein the curing agent of component (2) in the electrodepositable coating composition is present in an amount of 20 to 80 percent by weight based on the total combined weight of resin solids (1) and (2).

95. The process of claim 80, wherein the electrodepositable coating composition is substantially free of lead.

96. A process for coating a metal substrate comprising the following steps:

(a) optionally forming a metal object from the substrate;

(b) optionally cleaning the substrate with an alkaline and/or acidic cleaner;

(c) optionally pretreating the substrate with a solution selected from the group consisting of a metal phosphate solution, an aqueous solution containing at least one Group IIIB or IVB metal, an organophosphate solution, an organophosphonate solution, and combinations thereof;

(d) optionally rinsing the substrate with water;

(e) electrophoretically depositing on the substrate a curable, electrodepositable coating composition comprising the following components:

(1) an active hydrogen-containing, cationic salt group-containing resin electrodepositable on a cathode; and

(2) an at least partially blocked polyisocyanate curing agent,

wherein the cationic salt group-containing resin of component (1) is derived from a polyglycidyl ether of a polyhydric phenol essentially free of aliphatic carbon atoms to which are bonded more than one aromatic group, and

wherein the curing agent of component (2) is essentially free of isocyanato groups or blocked isocyanato groups to which are bonded aromatic groups;

(f) heating the substrate to a temperature of 250°F to 400°F (121.1°C to 204.4°C) for a time sufficient to effect cure of the electrodepositable composition;

(g) applying directly to the electrodepositable composition one or more pigment-containing top coating compositions and/or one or more pigment-free top coating compositions; and

(h) heating the coated substrate to a temperature and for a time sufficient to effect cure of the pigment-containing and/or pigment-free coating compositions.

97. The process of claim 96, wherein the substrate is cold rolled steel and wherein the substrate is pretreated as in step (c).

98. A curable, electrodepositable coating composition comprising the following components:

(a) an active hydrogen-containing, cationic salt group-containing resin electrodepositable on a cathode; and

(b) an at least partially blocked polyisocyanate curing agent,

wherein the cationic salt group-containing resin of component (a) is derived from a polyglycidyl ether of a polyhydric phenol essentially free of aliphatic carbon atoms to which are bonded more than one aromatic group,

wherein the curing agent of component (b) is essentially free of isocyanato groups or blocked isocyanato groups to which are bonded aromatic groups, and

wherein when the electrodepositable coating composition is applied to a zinc substrate and cured, then subjected to corrosion testing in accordance with ASTM

B117 and/or GM standard 9540P, Method B, the electrodepositable coating composition will have no more scribe corrosion than exhibited by control compositions containing aromatic isocyanates and/or Bisphenol A based aromatic polyepoxides, and wherein when the electrodepositable coating composition is topcoated with a transparent coating composition having greater than 50% transmission of 400 nm wave length ultraviolet region energy, the electrodepositable coating composition will endure at least 1500 hours xenon arc accelerated weathering as per SAE J1960 without substantial degradation thereof.

99. The coating composition of claim 98, wherein the cationic salt groups are amine salt groups.

100. The coating composition of claim 99, wherein the cationic salt groups are derived from an amine containing a nitrogen atom to which is bonded at least one substituted alkyl group having a hetero atom in a beta- position relative to the nitrogen atom.

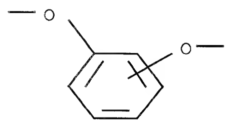
101. The coating composition of claim 100, wherein the amine salt groups are derived from a compound selected from diethanolamine, aminopropyldiethanolamine, N-methylethanolamine, aminopropylmorpholine, N-(2-aminoethyl)-morpholine, diethylenetriamine, diethylenetriamine bisketimine, and mixtures thereof.

102. The coating composition of claim 99, wherein the amine salt groups are derived from basic nitrogen groups neutralized with an acid selected from the group consisting of formic acid, acetic acid, lactic acid, phosphoric acid, sulfamic acid, dimethylolpropionic acid, and mixtures thereof.

103. The coating composition of claim 98, wherein the polyhydric phenol is selected from the group consisting of resorcinol, hydroquinone, catechol, and mixtures thereof.

104. The coating composition of claim 103, wherein the polyhydric phenol is selected from resorcinol, catechol, and mixtures thereof.

105. The coating composition of claim 103, wherein the cationic salt group-containing resin of component (a) comprises at least 16 percent by weight, based on the total weight of the resin solids, of a functional group having the following structure:



106. The coating composition of claim 98, further comprising at least one source of a metal selected from rare earth metals, yttrium, and mixtures thereof, present in an amount of 0.005 to 5 percent by weight metal, based on the total weight of resin solids in the coating composition.

107. The coating composition of claim 106, wherein the metal comprises yttrium.

108. The coating composition of claim 98, further comprising a hindered amine light stabilizer, present in an amount of 0.1 to 2 percent by weight, based on the total weight of resin solids in the electrodepositable coating composition.

109. The coating composition of claim 98, wherein the cationic salt group-containing resin of component (a) is present in an amount of 20 to 80 percent by weight based on the total combined weight of resin solids of (a) and (b).

110. The coating composition of claim 98, wherein the curing agent of component (b) is present in an amount of 20 to 80 percent by weight based on the total combined weight of resin solids of (a) and (b).

111. The coating composition of claim 98, wherein the composition is substantially free of lead.

112. A process for coating a metal substrate comprising the following steps:

(a) electrophoretically depositing on the substrate a curable, electrodepositable coating composition essentially free of heavy metals and comprising the following components:

(1) an active hydrogen-containing, cationic salt group-containing polymer electrodepositable on a cathode and derived from a polymer selected from the group consisting of an acrylic polymer, a polyester polymer, a polyurethane polymer, and mixtures thereof;

(2) an at least partially blocked polyisocyanate curing agent and

(3) at least one source of a metal selected from rare earth metals, yttrium, and mixtures thereof, present in an amount of 0.005 to 5 percent by weight metal, based on the total weight of polymer solids in the electrodepositable coating composition.,

(b) heating the substrate to a temperature of 250 to 400°F (121.1 to 204.4°C) for a time sufficient to effect cure of the electrodepositable composition.

113. The process of claim 112, wherein the metal of component (3) is yttrium.

114. A process for coating a metal substrate comprising the following steps:

(a) optionally forming a metal object from the substrate;

(b) optionally cleaning the substrate with an alkaline and/or acidic cleaner;

(c) optionally pretreating the substrate with a solution substantially free of heavy metals and selected from the group consisting of a metal phosphate solution, an aqueous solution containing at least one Group IIIB or IVB metal, an organophosphate solution, an organophosphonate solution, and combinations thereof;

(d) optionally rinsing the substrate with water;

(e) electrophoretically depositing on the substrate a curable, electrodepositable coating composition free of heavy metals and comprising:

(1) an active hydrogen-containing, cationic salt group-containing polymer electrodepositable on a cathode and derived from a polymer selected from the group consisting of acrylic, polyester, polyurethane, and mixtures thereof;

(2) an at least partially capped polyisocyanate curing agent essentially free of isocyanato groups or capped isocyanato groups to which are bonded aromatic groups; and

(3) at least one source of a metal selected from rare earth metals, yttrium, and mixtures thereof, present in an amount of 0.005 to 5 percent by weight metal, based on the total weight of polymer solids in the electrodepositable coating composition, wherein the polymer is essentially free of aliphatic carbon atoms to which are bonded more than one aromatic group; and

(f) heating the substrate to a temperature of 250 to 400°F (121.1 to 204.4°C) for a time sufficient to effect cure of the electrodepositable composition.